

WHAT IS CLAIMED IS:

1. A structure for holding a substrate within a substrate bonding apparatus,
comprising:

5 a stage having a contact surface;

at least one passage arranged within the stage and intersecting the contact surface;

a suction force applying means for transmitting a suction force a predetermined
distance from the contact surface, wherein the suction force applying means is arranged
within each passage, and wherein a portion of the suction force applying means is selectively
10 projectable from within a respective passage to the predetermined distance from the contact
surface; and

a vacuum pump generating the suction force.

2. The structure of claim 1, wherein the suction force applying means includes:

15 a pad having at least one vacuum hole transmitting the suction force to an operably
proximate portion of a substrate;

a moving pipe in fluid communication with the at least one vacuum hole and the
vacuum pump, wherein the moving pipe is movable within the passage; and

a driving part moving the moving pipe within the passage.

20 3. The structure of claim 2, wherein

the at least one passage has first cross-sectional dimensions;

the pad has second cross-sectional dimensions; and

the second cross-sectional dimensions are smaller than the first cross-sectional
25 dimensions.

4. The structure of claim 3, wherein the second cross-sectional dimensions are substantially conformal to the first cross-sectional dimensions.

5. The structure of claim 2, wherein
5 the driving part comprises an actuator; and
the moving pipe is an axis of the actuator.

6. The structure of claim 2, wherein
the driving part comprises a step motor; and
10 the moving pipe is an axis of the motor.

7. The structure of claim 1, further comprising sensing means for measuring a distance between the contact surface and a proximately arranged substrate.

15 8. The structure of claim 7, wherein the sensing means comprises an interval
check sensor.

9. The structure of claim 1, further comprising a plurality of vacuum holes
arranged within the stage and in fluid communication with the vacuum pump transmitting the
20 generated suction force from the contact surface.

10. The structure of claim 1, wherein the stage comprises an upper stage.

11. The structure of claim 1, wherein the stage comprises a lower stage.

12. A method of holding a substrate within a substrate bonding apparatus, comprising:

providing a stage having a contact surface and at least one passage intersecting the contact surface;

5 providing a suction force applying means within each passage for transmitting a suction force a predetermined distance from the contact surface;

arranging a substrate proximate the stage;

generating the suction force;

transmitting the generated suction force from the suction force applying means to
10 operably proximate portions of the substrate; and

holding the substrate substantially parallel to the contact surface.

13. The method of claim 12, further comprising providing a plurality of vacuum holes within the stage transmitting the generated suction force from the contact surface.

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14. The method of claim 13, further comprising transmitting the generated suction force from the plurality of vacuum holes to operably proximate portions of the substrate.

15. The method of claim 12, wherein transmitting the generated suction force
20 from the suction force applying means comprises moving the suction force applying means with respect to the contact surface such that the suction force applying means is operably proximate the at least one portion of the substrate.

16. The method of claim 15, wherein moving the suction force applying means comprises projecting an end portion of the suction force applying means from within a respective passage to the predetermined distance from the contact surface.

5 17. The method of claim 16, wherein the projecting comprises arranging an end portion of the suction force applying means operably proximate a portion of the substrate.

18. The method of claim 12, wherein holding the substrate substantially parallel to the contact surface comprises moving the suction force applying means with respect to the
10 contact surface.

19. The method of claim 18, wherein the moving comprises arranging an end portion of the suction force applying means within a respective passage such that the end portion is substantially flush with the contact surface.

15 20. A method of holding a substrate to a stage within a substrate bonding apparatus, comprising:

generating a suction force;

transmitting the generated suction force from a contact surface of a stage; and

20 transmitting the generated suction force from a predetermined distance away from the contact surface.

21. The method of claim 20, further comprising applying the generated suction force transmitted from the contact surface to at least one portion of a substrate.

22. The method of claim 20, further comprising applying the generated suction force transmitted from the predetermined distance away from the contact surface to at least one portion of a substrate.

5 23. The method of claim 22, further comprising transmitting the generated suction force applied to the at least one portion of the substrate from the contact surface of the stage.